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## WHAT IS CLAIMED IS:

1. A coaxial via hole used in a carrier, comprising:

an outer cylinder-shaped conductor extending along a first direction;

an inner cylinder-shaped conductor in the outer cylinder-shaped conductor, wherein the inner cylinder-shaped conductor extends along the first direction; and

an insulating fill between the outer cylinder-shaped conductor and the inner cylinder-shaped conductor.

- 2. The coaxial via hole as claimed in claim 1, wherein the first direction is vertical to a direction along which the carrier extends.
- 3. The coaxial via hole as claimed in claim 1, wherein the carrier is a printed circuit board (PCB).
- 4. The coaxial via hole as claimed in claim 1, wherein the carrier is a substrate.
- 5. The coaxial via hole as claimed in claim 1, wherein the carrier is an Integrated Circuit (IC) socket.
  - 6. The coaxial via hole as claimed in claim 1, wherein the carrier is an adapter.

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- 7. The coaxial via hole as claimed in claim 1, wherein the carrier is a connector.
- 8. The coaxial via hole as claimed in claim 1, wherein the carrier is a heat sink.
- 9. The coaxial via hole as claimed in claim 1, wherein the carrier at least comprises a conductive layer and the coaxial via hole penetrates a portion of the carrier.
- 10. The coaxial via hole as claimed in claim 1, wherein the carrier at least comprises a conductive layer and the coaxial via hole penetrates the carrier.
- 11. The coaxial via hole as claimed in claim 1, wherein a cross section, in a direction vertical to the first direction, of the outer cylinder-shaped conductor can shape as any configuration and wherein a cross section, in the direction vertical to the first direction, of the inner cylinder-shaped conductor can shape as any configuration.
- 12. The coaxial via hole as claimed in claim 1, the inner cylinder-shaped conductor is connected to a negative voltage source.
- 13. The coaxial via hole as claimed in claim 1, the inner cylinder-shaped conductor is connected to a positive voltage source.

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- 14. The coaxial via hole as claimed in claim 1, the inner cylinder-shaped conductor is connected to a signal conductor.
- 15. The coaxial via hole as claimed in claim 1, the outer cylinder-shaped conductor is connected to a negative voltage source.
- 16. The coaxial via hole as claimed in claim 1, the outer cylinder-shaped conductor is connected to a positive voltage source.
- 17. The coaxial via hole as claimed in claim 1, the outer cylinder-shaped conductor is connected to a signal conductor.
  - 18. The coaxial via hole as claimed in claim 1, further comprising:

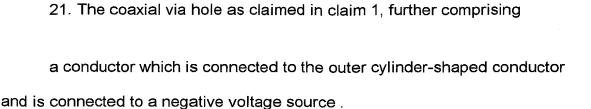
a conductor which is connected to the inner cylinder-shaped conductor and is connected to a negative voltage source.

19. The coaxial via hole as claimed in claim 1, further comprising:

a conductor which is connected to the inner cylinder-shaped conductor and is connected to a positive voltage source.

20. The coaxial via hole as claimed in claim 1, further comprising:

a conductor which is connected to the inner cylinder-shaped conductor and is connected to a signal conductor.



a conductor which is connected to the outer cylinder-shaped conductor and is connected to a positive voltage source.

22. The coaxial via hole as claimed in claim 1, further comprising

- 23. The coaxial via hole as claimed in claim 1, further comprising a conductor which is connected to the outer cylinder-shaped conductor and is connected to a signal conductor.
- 24. The coaxial via hole as claimed in claim 1,wherein the insulating fill is made of a material with high dielectric constant.
  - 25. A method of manufacturing a coaxial via hole, comprising:
  - (a) forming a first hole in a carrier;
- (b) making the interior of the first hole conduct electricity to form anouter cylinder-shaped conductor;
  - (c) placing an insulating material in the outer cylinder-shaped conductor to form an insulating fill;

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- (d) forming a second hole in the insulating fill, wherein the second hole has a diameter smaller than the diameter of the first hole; and
- (e) making the interior of the second hole conduct electricity to form an inner cylinder-shaped conductor.
- 26. The method of manufacturing a coaxial via hole as claimed in claim 25, wherein in said step (b), making the interior of the first hole become conduct electricity to form an outer cylinder-shaped conductor by plating.
- 27. The method of manufacturing a coaxial via hole as claimed in claim 25 or 26, wherein in said step (e), making the interior of the second hole become conduct electricity to form an inner cylinder-shaped conductor by plating.
- 28. The method of manufacturing a coaxial via hole as claimed in claim 25 or 26, wherein in said step (e), making the interior of the second hole become conduct electricity to form an inner cylinder-shaped conductor by placing conductive paste.
- 29. The method of manufacturing a coaxial via hole as claimed in claim 25, wherein in said step (c), the insulating material is filled in the outer cylinder-shaped conductor by plugging.
- 30. The method of manufacturing a coaxial via hole as claimed in claim 25, wherein in said step (c), the insulating material is filled in the outer

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cylinder-shaped conductor by laminating.

31. A coaxial via hole used in a carrier, comprising:

an outer cylinder-shaped conductor extending along a first direction;

an inner cylinder-shaped conductor in the outer cylinder-shaped conductor, wherein the inner cylinder-shaped conductor extends along the first direction; and

an electrical-resistant fill between the outer cylinder-shaped conductor and the inner cylinder-shaped conductor.

32. The coaxial via hole as claimed in claim 31, further comprising:

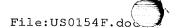
a conductor which is connected to the outer cylinder-shaped conductor and is connected to a signal conductor.

33. The coaxial via hole as claimed in claim 31, further comprising:

a conductor which is connected to the outer cylinder-shaped conductor and is connected to positive voltage source.

34. The coaxial via hole as claimed in claim 31, further comprising:

a conductor which is connected to the outer cylinder-shaped conductor and is connected to a negative source.





35. The coaxial via hole as claimed in claim 31, further comprising:

a conductor which is connected to the inner cylinder-shaped conductor and is connected to a signal conductor.

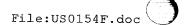
- 36. The coaxial via hole as claimed in claim 31, further comprising:
- a conductor which is connected to the inner cylinder-shaped conductor and is connected to a positive voltage source.
  - 37. The coaxial via hole as claimed in claim 31, further comprising:

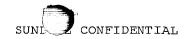
a conductor which is connected to the inner cylinder-shaped conductor and is connected to a negative voltage source.

- 38. The coaxial via hole as claimed in claim 31, wherein the carrier is a PCB.
- 39. The coaxial via hole as claimed in claim 31, wherein the carrier is a substrate.
- 40. The coaxial via hole as claimed in claim 31, wherein the carrier is an IC socket.
  - 41. The coaxial via hole as claimed in claim 31, wherein the carrier is an adapter.

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- 42. The coaxial via hole as claimed in claim 31, wherein the carrier is a connector.
- 43. The coaxial via hole as claimed in claim 31, wherein the carrier is a heat sink.
- 44. The coaxial via hole as claimed in claim 31, wherein the first direction is vertical to a direction along which the carrier extends.
- 45. The coaxial via hole as claimed in claim 31, wherein the carrier at least comprises a conductive layer and the coaxial via hole penetrates a portion of the carrier.
- 46. The coaxial via hole as claimed in claim 31, wherein the carrier at least comprises a conductive layer and the coaxial via hole penetrates the carrier.
  - 47. A method of manufacturing a coaxial via hole, comprising:
  - (a) forming a first hole in a carrier;
- (b) making the interior of the first hole become conduct electricity to form an outer cylinder-shaped conductor;
  - (c) placing an electrical-resistant material in the outer cylinder-shaped conductor to form an electrical-resistant fill;





- (d) forming a second hole in the electrical-resistant region, wherein the second hole has a diameter smaller than the diameter of the first hole; and
- (e) making the interior of the second hole become conduct electricity to form an inner cylinder-shaped conductor.
- 48. The method of manufacturing a coaxial via hole as claimed in claim 47, wherein in said step (b), making the interior of the first hole become conduct electricity to form an outer cylinder-shaped conductor by plating.
- 49. The method of manufacturing a coaxial via hole as claimed in claim 47 or 48, wherein in said step (e), making the interior of the second hole become conduct electricity to form an inner cylinder-shaped conductor by plating.
- 50. The method of manufacturing a coaxial via hole as claimed in claim 47 or 48, wherein in said step (e), making the interior of the second hole become conduct electricity to form an inner cylinder-shaped conductor by placing conductive paste.

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